

CLAIMS

1. A fuel cell having at least a membrane electrode assembly comprising an electrolyte membrane, a hydrogen electrode-side catalyst layer formed on one side thereof, and an air electrode-side catalyst layer formed on the other side thereof, in which the porosity of the hydrogen electrode-side catalyst layer is made to be lower than that of the air electrode-side catalyst layer.
2. The fuel cell according to claim 1, in which the weight ratio of ion-exchange resin to carbon carrier of the hydrogen electrode-side catalyst layer is made to be larger than the same ratio of the air electrode-side catalyst layer so that the porosity of the hydrogen electrode-side catalyst layer is made to be lower than that of the air electrode-side catalyst layer.
3. The fuel cell according to claim 2, in which the weight ratio of ion-exchange resin to carbon carriers of the hydrogen electrode-side catalyst layer is greater than or equal to 1.5:1 and less than 3.0:1 and the weight ratio of ion-exchange resin to carbon carriers of the air electrode-side catalyst layer is greater than or equal to 0.4:1 and less than 1.5:1.
4. The fuel cell according to claim 2, in which the volume of pore space of the hydrogen electrode-side catalyst layer accounts for 1.0% to 3.0% of the total volume of the catalyst layer and the volume of pore space of the air electrode-side catalyst layer accounts for 3% to 30% of the total volume of the catalyst layer.
5. The fuel cell according to claim 1, in which the hydrogen electrode-side catalyst layer is allowed to contain an additive having a certain particle diameter or less so that the porosity of the hydrogen electrode-side catalyst layer is made to be lower than that of the air electrode-side catalyst layer.
6. The fuel cell according to claim 5, in which the average particle diameter of the additive is less than or equal to 0.3 μm .
7. The fuel cell according to claim 5, in which the volume of pore space of the hydrogen electrode-side catalyst layer accounts for 1.0% to 3.0% of the total

volume of the catalyst layer and the volume of pore space of the air electrode-side catalyst layer accounts for 3.0% to 30% of the total volume of the catalyst layer.

8. The fuel cell according to claim 1, in which the hydrogen electrode-side catalyst layer is formed by spraying a catalyst ink and the air electrode-side catalyst layer is formed by a transfer method so that the porosity of the hydrogen electrode-side catalyst layer is made to be lower than that of the air electrode-side catalyst layer.